

## EPA Official Record

**Notes ID:** 631F9E4F133CA17488257AF30052D9A3

**From:** Kira Lynch/R10/USEPA/US

**To:** David Burden/ADA/USEPA/US@EPA; JohnT Wilson/ADA/USEPA/US@EPA

**Copy To:** Marcia Bailey/R10/USEPA/US@EPA; Brandon Perkins/R10/USEPA/US@EPA

**Delivered Date:** 01/14/2013 07:08 AM PST

**Subject:** Fw: Alaska DEC Tech Support Request

Hi Dave and John

I will be meeting with Brandon today who was the person responsible for the PA. Marcia Bailey has also been involved with the project from the toxicity standpoint and we need to coordinate with her. We would like to have John's support be coordinated through the Region rather than directly to DEC. I will set up a call to discuss after I have met with Brandon.

Kira

Kira Lynch

Superfund Technology Liaison (STL) - Region 10

ORD - Office of Science and Policy

1200 Sixth Avenue, Suite 900

Office of Environmental Assessment (OEA)

Seattle WA 98101

phone: 206-553-2144

cell: 206-850-4323

fax: 206-553-0119

----- Forwarded by Kira Lynch/R10/USEPA/US on 01/14/2013 07:04 AM -----

From: Dan Opalski/R10/USEPA/US

To: Rick Albright/R10/USEPA/US@EPA

Cc: Sylvia Kawabata/R10/USEPA/US@EPA, Kira Lynch/R10/USEPA/US@EPA

Date: 01/11/2013 10:21 AM

Subject: Fw: Alaska DEC Tech Support Request

Rick --

I don't know what conversations may have occurred since you and I talked very briefly about Flint Hills, but for what it is worth, I'd say this request for support is consistent with the spirit of what I had talked about with Steve Bainbridge. To re-summarize, given that DEC seemed to have concluded that recovering/controlling the dissolved off-site plume was not worth pursuing, I suggested we might be able to provide some hydro review/advice on whether there might be some opportunities to do some level of plume control (pump and treat or whatever), in part based upon the characteristics of the plume and our standard practices at our cleanups. Their request of ORD is more tailored to this degradation issue, but of course the general idea I had discussed with them is related, and in fact the potential for troublesome degradation projects could very well be an additional driver for being more proactive on the larger plume. I had sort of thought that Region 10 would be more "in the middle" in terms of helping to line up technical for them, or perhaps having the support provided (subject to resource limitations) from within our OEA hydro group rather than or in conjunction with ORD, but I'll leave that to you all to figure out.

Dan Opalski

U.S. Environmental Protection Agency, Region 10

----- Forwarded by Dan Opalski/R10/USEPA/US on 01/11/2013 09:44 AM -----

From: David Burden/ADA/USEPA/US  
To: Dan Opalski/R10/USEPA/US@EPA, Rick Albright/R10/USEPA/US@EPA, Kira Lynch/R10/USEPA/US@EPA, JohnT Wilson/ADA/USEPA/US@EPA,  
Date: 01/11/2013 09:24 AM  
Subject: Alaska DEC Tech Support Request

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Dan and Rick,

We have received a request from the ADEC's Jim Fish to provide some technical support in the form of consultation and peer review as related to the Flint Hills Resources North Pole Refinery. Jim has specifically requested the assistance of Dr. John Wilson here at our EPA/ORD Lab in Ada, OK. I manage the ORD Ground Water Technical Support Center, which provides technical assistance for the Regions on Superfund and RCRA sites across the country. We have worked on numerous SF and RCRA sites in Region 10 in the past and have a great working relationship with many people there in Region 10. Occasionally we receive requests such as the one below directly from the states, but we always want to make sure the appropriate EPA Region is on board with us providing technical support and advice. Therefore, I wanted to make you both aware of this request and make sure Region 10 is okay with us providing technical support. Jim Fish's original email request is attached below for your information. Please respond back to me and Dr. Wilson if you concur with this request. We will be happy to include you in any conference calls or discussions concerning this site as well as cc you on any official memos or correspondence we provide to ADEC.

If you have any further questions, please feel free to contact me at your convenience.

Dave Burden

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David S. Burden, Ph.D., Director  
Ground Water Technical Support Center  
Ground Water and Ecosystems Restoration Division  
National Risk Management Research Laboratory  
U.S. Environmental Protection Agency  
Ada, OK  
Email: [burden.david@epa.gov](mailto:burden.david@epa.gov)  
Phone: 580-436-8606

*"We make a living by what we get.*

*We make a life by what we give."*

*-- Sir Winston Churchill*

----- Forwarded by David Burden/ADA/USEPA/US on 01/11/2013 11:07 AM -----

From: JohnT Wilson/ADA/USEPA/US  
To: David Burden/ADA/USEPA/US@EPA  
Cc: Kelly Smith/ADA/USEPA/US@EPA  
Date: 01/09/2013 01:49 PM  
Subject: Fw: Request for consultation/peer review

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Dave: Please see below. Let me know if you accept this request.

----- Forwarded by JohnT Wilson/ADA/USEPA/US on 01/09/2013 01:48 PM -----

From: "Fish, James T (DEC)" <james.fish@alaska.gov>  
To: JohnT Wilson/ADA/USEPA/US@EPA  
Date: 01/09/2013 12:49 PM  
Subject: Request for consultation/peer review

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Hello Dr. Wilson,

I am requesting consultation and peer review support from the USEPA's Ada Laboratory Subsurface Remediation Branch to better understand the degradation (both biological and abiotic) of sulfolane (2,3,4,5-tetrahydrothiophene-1,1-dioxide) in the subsurface aquifer in North Pole, Alaska. This compound is a contaminant originating from the Flint Hills Resources (FHR) North Pole Refinery, whose release has resulted in a contaminated groundwater plume roughly 3-miles long and 2-miles wide. This compound has been detected in the

municipal drinking water well, and in over 300 private residential drinking water wells. Since its discovery, a new municipal well has been installed, and most residences have been given bottled water (since 2010) and options for alternative water supplies – one of which includes a point-of-entry treatment system based on granulated activated carbon use. Site characterization work continues both on-site at the refinery, and off-site to delineate the vertical and horizontal distribution of sulfolane. The site has also been recently ranked during a preliminary assessment conducted by EPA Region 10.

Because little is known concerning the toxicity of sulfolane, its transport and fate in a subsurface environment containing discontinuous permafrost, as well as the mechanism and rates of its degradation in soil and groundwater, ADEC has formed a number of Technical Project Teams to study these various issues. I am specifically involved in understanding the degradation of sulfolane, and have formulated a study plan with input from various stakeholders (i.e., the responsible parties, consultants, and the University of Alaska, Fairbanks). An alternative groundwater cleanup level of 14 µg/L for sulfolane has been established for this site.

ADEC Contaminated Sites Program has an on-going dialogue with Region 10 EPA (Dan Opalski, and now Rick Albright) concerning the oversight of this large-scale contaminated site issue. Feasibility studies and a cleanup plan for both on-site at the refinery as well as off-site for the contaminated groundwater plume is currently under development. From preliminary studies, and review of the scientific literature, sulfolane appears to degrade rapidly under aerobic conditions, and aerobic sulfolane-degrading microorganism have been enriched and isolated from source area monitoring wells. However, the majority of the Tanana river aquifer in North Pole is anaerobic, with iron and manganese reduction, and to some degree sulfate reduction, prevalent. Laboratory microcosm incubations and stable isotope probing experiments are underway at the University of Alaska, Fairbanks. As well, compound specific isotope analysis of sulfolane has been performed at the University of Oklahoma. A recent development has been to consider the degradation mechanisms on granulated activated carbon POE systems, and determine if users are being exposed to degradation intermediate compounds.

ADEC is asking EPA Ada Laboratory staff to assist in the review documents, occasionally attend (telephonically) sub-group or technical meetings, and provide comments and recommendations specifically to better understand the biological and abiotic degradation of sulfolane, how best to determine its degradation rate in-situ, and how best to apply this information to proposed cleanup actions (e.g., implementation and evaluation of an on-site air-sparge curtain and off-site monitored natural attenuation).

Please let me know if you can provide this type consultation and peer review support. You can find more information about sulfolane and the North Pole contaminated site at:

<http://dec.alaska.gov/spar/csp/sites/north-pole-refinery/index.htm>

(once here, please navigate to the links under “project Links” on the left-hand side of the webpage).

Additional technical information about sulfolane and a brief literature summary can be found at:

<http://dec.alaska.gov/spar/csp/sites/north-pole-refinery/docs/SulfolaneAppendix%20F.pdf>

I can also forward more technical documents if you are interested.

Please do not hesitate to contact me to discuss any details of this project. Thank you for your consideration.

Jim

**Jim Fish**

Alaska Department of Environmental Conservation

Contaminated Sites Program

610 University Avenue

Fairbanks, Alaska 99709

Ph 451-2117

FAX 451-5105

[james.fish@alaska.gov](mailto:james.fish@alaska.gov)